

49–52 ■ Graph the functions on the same screen using the given viewing rectangle. How is each graph related to the graph in part (a)?

49. Viewing rectangle $[-8, 8]$ by $[-2, 8]$

- (a) $y = \sqrt[4]{x}$ (b) $y = \sqrt[4]{x+5}$
 (c) $y = 2\sqrt[4]{x+5}$ (d) $y = 4 + 2\sqrt[4]{x+5}$

50. Viewing rectangle $[-8, 8]$ by $[-6, 6]$

- (a) $y = |x|$ (b) $y = -|x|$
 (c) $y = -3|x|$ (d) $y = -3|x-5|$

51. Viewing rectangle $[-4, 6]$ by $[-4, 4]$

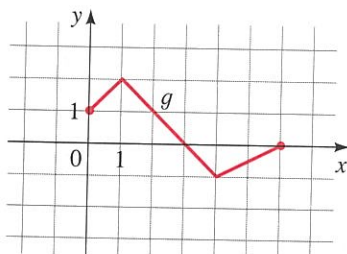
- (a) $y = x^6$ (b) $y = \frac{1}{3}x^6$
 (c) $y = -\frac{1}{3}x^6$ (d) $y = -\frac{1}{3}(x-4)^6$

52. Viewing rectangle $[-6, 6]$ by $[-4, 4]$

- (a) $y = \frac{1}{\sqrt{x}}$ (b) $y = \frac{1}{\sqrt{x+3}}$
 (c) $y = \frac{1}{2\sqrt{x+3}}$ (d) $y = \frac{1}{2\sqrt{x+3}} - 3$

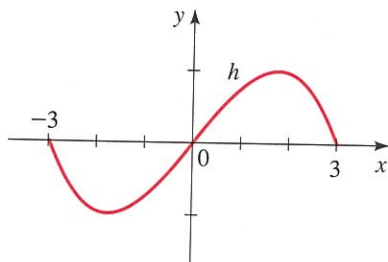
53. The graph of g is given. Use it to graph each of the following functions.

- (a) $y = g(2x)$ (b) $y = g(\frac{1}{2}x)$



4. The graph of h is given. Use it to graph each of the following functions.

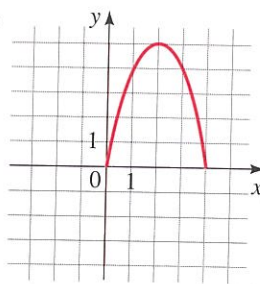
- (a) $y = h(3x)$ (b) $y = h(\frac{1}{3}x)$



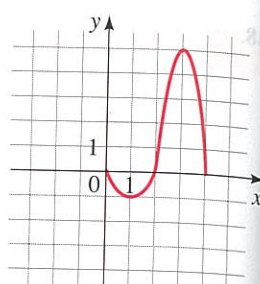
56 ■ The graph of a function defined for $x \geq 0$ is given. Complete the graph for $x < 0$ to make

- (a) an even function
 (b) an odd function

55.



56.



57–58 ■ Use the graph of $f(x) = \lfloor x \rfloor$ described on pages 162–163 to graph the indicated function.

57. $y = \lfloor 2x \rfloor$

58. $y = \lfloor \frac{1}{4}x \rfloor$

59. If $f(x) = \sqrt{2x - x^2}$, graph the following functions in the viewing rectangle $[-5, 5]$ by $[-4, 4]$. How is each graph related to the graph in part (a)?

- (a) $y = f(x)$ (b) $y = f(2x)$ (c) $y = f(\frac{1}{2}x)$

60. If $f(x) = \sqrt{2x - x^2}$, graph the following functions in the viewing rectangle $[-5, 5]$ by $[-4, 4]$. How is each graph related to the graph in part (a)?

- (a) $y = f(x)$ (b) $y = f(-x)$ (c) $y = -f(-x)$
 (d) $y = f(-2x)$ (e) $y = f(-\frac{1}{2}x)$

61–68 ■ Determine whether the function f is even, odd, or neither. If f is even or odd, use symmetry to sketch its graph.

61. $f(x) = x^{-2}$

62. $f(x) = x^{-3}$

63. $f(x) = x^2 + x$

64. $f(x) = x^4 - 4x^2$

65. $f(x) = x^3 - x$

66. $f(x) = 3x^3 + 2x^2 + 1$

67. $f(x) = 1 - \sqrt[3]{x}$

68. $f(x) = x + \frac{1}{x}$

69. The graphs of $f(x) = x^2 - 4$ and $g(x) = |x^2 - 4|$ are shown. Explain how the graph of g is obtained from the graph of f .

